Summary of Meeting #17, of RTCA SC-186, Working Group 5
[For the Development of Revision A of a UAT MOPS]
http://adsb.tc.faa.gov/WG5.htm

The 17th meeting of Working Group 5 (WG-5) was held 6 November 2003, as a Teleconference beginning at 1:00pm EST and lasting until 4:00pm. The meeting was called to order at 1:00p.m. on 6 November 2003 by Co-Chairman George Ligler. George welcomed all attendees and asked that each one introduce themselves and their organization. The attendees during all or part of the meeting session included:

Larry Bachman – JHU – APL	Todd Kilbourne – Trios Associates	Stuart Searight – FAA (ACB-420)
Bob Burns – Titan – FAATC – ACB-410	George Ligler – PMEI	David Thomas – Titan - FAATC - ACB-410
Ray Collins – FAA	Bob Manning – Emergent-IT (HQ USAF)	Edward Valovage – Sensis Corp
Gary Furr – Titan - FAATC - ACB-410	Chris Moody – Mitre CAASD	Hank Williams – FAA
Carl Gleason – Advancia FAA/NISC	Tom Mosher – Garmin AT	
Richard Jennings – FAA (AIR-130)	Tom Pagano – FAATC – ACB-410	

The following known regrets to attendance to this meeting were received prior to, or during the meeting:

- Warren Wilson, Mitre

1. George began the meeting by reporting that the UAT SARPS and Technical Manual were approved, by ICAO ACP WG-C during a meeting just concluded in Toulouse France, to proceed to the Validation Phase. The Validation period is expected to last about one year and the recommendation to accept the SARPS is expected to occur at the ACP WG-C meeting that is currently scheduled for April 2005. The Validation Plan was also approved by ACP WG-C and the Validation Cross Reference Index was provisionally approved with the addition of entries for flight testing. The WG-C UAT Subgroup expects to hold about five meetings during the Validation Phase. The next meeting is not currently scheduled, but is expected to be in Montreal in late February 2004.

George also reports that Rockwell Collins and Alaska Airlines have been discussing exploiting the possibility of Rockwell, under FAA funding, building an A3 transmitter. This A3 unit would not be certified, but it will be used for validation testing of the UAT SARPS requirements.

It is also the intent of the UAT Subgroup to deliver to ACP WG-C a set of frequency planning criteria.

2. George continued by discussing Agenda Item #2 with a status of actions taken on the Flight Plan ID Issue. George reported that he has not yet had a meeting with FAA ATC technical lead engineers in the automation systems to determine how the automation systems currently use the Flight Plan ID data, and intend to use it in the future. The need for the Flight Plan ID has been positively established, but before WG-5 can make firm plans to update DO-282 with changes identified in Working Paper UAT-WP-14-02, the frequency of receipt of the Flight Plan ID must be determined.

3. The Working Group then began review of Working Paper WP-17-03, presented by Gary Furr. During the review of the UAT SARPS and Technical Manual in March 2003 in

Montreal, Alessandro Capretti had commented on the air/ground determination and an action item was generated to write an Issue Paper (IP-71) for consideration by RTCA SC-186 WG-6 for determination of the correct logic for determining and validating the air/ground state. During a discussion on the draft of the ASA MASPS during the last RTCA SC-186 Plenary, it was noted that the same errors as were identified in IP-71 had been copied into the draft ASA MASPS. SC-186 assigned an Ad Hoc Working Group to analyze the air/ground determination issue and formulate a conclusion and correct set of logic for the ASA MASPS and for all other RTCA and International documents. The text shown in Working Paper UAT-WP-17-03 is the final recommendation of the Ad Hoc Working Group for inclusion in the ASA MASPS and for inclusion in the 1090 SARPS, 1090 MOPS, UAT MOPS, UAT SARPS and the ADS-B MASPS. The text presented in WP-17-03 has been agreed to by the ACP and the WG-B SCRSP Technical Subgroup for inclusion in the 1090 SARPS. It was suggested by Gary Furr that the exact text shown in WP-17-03 be taken and inserted in the respective paragraphs of the UAT MOPS (DO-282) to totally replace the text and tables currently defining the air/ground determination and validation. After discussion, WG-5 ***agreed*** that WP-17-03 be so implemented. Gary will update the working copy of the UAT MOPS with WP-17-03 and additionally place change pages onto the WG-5 web site so that manufacturers can easily see the proposed changes.

4. The Working Group then began review of Working Paper UAT-WP-17-01, presented by Tom Mosher. This Working Paper addressed a problem that has been uncovered during the development of UAT equipment for the encoding of the NAC_V information field. Tom pointed out that §2.2.4.5.4.10 in DO-282 has insufficient guidance to determine the NAC_V value. He further points out in the Working Paper that some guidance is given in the ADS-B MASPS (DO-242A), Appendix R, which provides the rationale for determining NAC_V from the HFOM and VFOM outputs from a GPS receiver. Tom points out that by comparing the HFOM and VFOM limits for a given NAC_V value in Tables R-2 and R-3 of DO-242A, it is clear that there is a wide discrepancy involving the utility of the HFOM and VFOM values depending on whether differential corrections are being used or not. Tom's recommendation in WP-17-01 was that until the requirements for NAC_V are finalized in a future version of the ADS-B MASPS, and any unresolved issues regarding derivation of NAC_V from GPS receiver performance are resolved, that the NAC_V field should be required in the UAT MOPS to be encoded as "unavailable" in any UAT equipment that complies with the UAT TSO C-514. After Working Group discussion, it was ***agreed*** that for UAT equipment being produced by Garmin AT for the Capstone project, the NAC_V value should be set to ZERO (0) to report an "unknown" value. However, the recommendation of the Working Paper to make a change to the UAT MOPS was ***rejected*** by the Working Group. Gary Furr was requested by the Working Group to forward a copy of Working Paper WP-17-01 to the Subgroup of SC-186 WG-4 that will be dealing with the STP requirements MOPS. This Subgroup is anticipated to include Jonathan Hammer, Steve Koczo and Tom Foster.

5. The Working Group then began review of Working Paper UAT-WP-17-02, presented by Warren Wilson, in cooperation with Tom Mosher, Larry Bachman, Tom Pagano and Ed Valovage. Warren was not able to join the teleconference, so the Working Paper was primarily presented by Tom Mosher with support from the other individuals. WP-17-02 is a follow-up analysis of materials previously presented to the Working Group in Working Paper WP-16-02, which pointed out that the UAT MOPS did not adequately test the capability of receivers to process triggers occurring at a high rate in scenarios with overlapping signals. WP-17-02 recommends a new requirement and corresponding test procedure to address the

issue and further recommends the possible modification of an existing test procedure in §2.4.8.3.3. After Working Group discussion, it was ***agreed*** that the recommendation of this Working Paper would be implemented. **Action Item 17-01** was accepted by Tom Mosher to draft a change to the test procedure in §2.4.8.3.3 and for Tom Pagano, Ed Valovage and Warren Wilson to review this draft in preparation for the next Working Group teleconference. There was further discussion related to Working Paper UAT-WP-10-01, in which Warren Wilson had previously presented UAT Message Overlap Statistics in response to Action Item 9-10. The main finding of UAT-WP-10-01 was that a receiver that can handle three simultaneous overlapping signals will be able to receive the vast majority of cases. **Action Item 17-02** was accepted by Larry Bachman to review UAT-WP-10-01 for possible update and inclusion into any revision of DO-282 as a new Appendix.

6. The Working Group agreed to hold two future teleconferences for the purpose of further reviewing possible changes to the UAT MOPS, some of which were presented during this meeting as Working Paper UAT-WP-17-04. It was agreed further that a three-day meeting would be held in February in Melbourne Florida for the purpose of finalizing the proposed changes to the UAT MOPS in preparation for presenting a consolidated draft change document to RTCA SC-186 at their Spring 2004 Plenary.

Dates/Time	**Meeting Place**
5 December 2003	Next RTCA SC-186 Plenary to be held at RTCA, Washington DC. No WG-5 meeting will be held in conjunction with this Plenary
8 December 2003 1:00pm – 5:00pm EST	WG-5 will hold a teleconference for the purpose of further reviewing a set of possible changes to DO-282 that would be necessary or desirable if the Working Group receives approval from RTCA SC-186 to publish a Change-1 to DO-282. Review items will also include a revision to Working Paper WP-17-04, responses to the assigned Action Items, and proposed changes to DO-282 related to the Diplexer.
12 January 2004 1:00pm – 5:00pm EST	WG-5 will hold a teleconference for the purpose of further reviewing a set of possible changes to DO-282 that would be necessary or desirable if the Working Group receives approval from RTCA SC-186 to publish a Change-1 to DO-282.
9, 10, 11 February 2004 daily @ 9am – 5pm EST	WG-5 meeting to be held in Melbourne FL for the purpose of finalizing all proposed changes to the UAT MOPS in preparation for presenting a consolidated draft change document to the RTCA SC-186 during their Spring 2004 Plenary (currently yet to be scheduled).

7. Working Papers UAT-WP-17-04 and UAT-WP-17-05 were not reviewed during this teleconference because of lack of time. Revisions of both of these documents will be placed on the Agenda of the December 8th teleconference to ensure that they are adequately reviewed.

All Working Papers for all WG-5 Meetings, as well as the Meeting Agendas, Meeting Minutes and Meeting Schedules will continue to be posted on the ADS-B UAT WG-5 web site located at: http://adsb.tc.faa.gov/WG5.htm